

CLAIMS

1. A combined oil ring comprising an oil ring with upper and lower rails and an expander for applying contact pressure radially outwards on said oil ring, wherein said upper and lower rails of said oil ring have outer circumferential surfaces comprising any of the structures described in the following items (a) through (d):

(a) An outer circumferential surface of said upper rail comprising: a flat surface with an axial width of 0.05 to 0.3 millimeters, a curved surface joining to the upper end of said flat surface and to the upper surface of said upper rail, and a curved surface joining to the lower end of said flat surface and to the lower surface of said upper rail;

An outer circumferential surface of said lower rail comprising: a flat surface with an axial width of 0.05 to 0.3 millimeters, a curved surface joining to the upper end of said flat surface and to the upper surface of said lower rail, and a curved surface joining to the lower end of said flat surface and to the lower surface of said lower rail;

(b) An outer circumferential surface of said upper rail comprising: a flat surface with an axial width of 0.05 to 0.3 millimeters, and a curved surface joining to the upper end of said flat surface and to the upper surface of said upper rail;

An outer circumferential surface of said lower rail comprising: a flat surface with an axial width of 0.05 to 0.3 millimeters, and a curved surface joining to the lower

end of said flat surface and to the lower surface of said lower rail;

(c) An outer circumferential surface of said upper rail comprising: a curved surface joining to the upper surface of said upper rail with the radial rail width decreasing from the lower end of said upper rail;

An outer circumferential surface of said lower rail comprising: a curved surface joining to the lower surface of said lower rail with the radial rail width decreasing from the upper end of said lower rail;

(d) An outer circumferential surface of said upper rail comprising: an asymmetrical barrel curved surface whose highest point is located at the lower side axially from the center of the axial rail width;

An outer circumferential surface of said lower rail comprising: an asymmetrical barrel curved surface whose highest point is located at the lower side axially from the center of the axial rail width.

2. A combined oil ring as claimed in claim 1, wherein the radial width of said curved surfaces described in said items (a) through (c) is from 25 to 75 micrometers.

3. A combined oil ring as claimed in claim 1, wherein the radial width on the upper side of said curved surface described in said item (d) is from 25 to 75 micrometers, and the radial width on the lower side is from 1 to 20 micrometers.

4. A combined oil ring as claimed in claim 1, claim 2 or claim 3, wherein the outer circumferential surfaces of said upper and lower rails are subjected to a low-friction surface treatment.